Community Mapping

a **million miles** better

What the Million Miles project aims to achieve, a quick guide to OpenStreetMap, essential and desirable features to contribute and other useful information!

What's it all about?

The Million Miles project

Transition Black Isle's Million Miles project aims to help local households find better ways to travel locally by improving access to public transport, increasing active travel and encouraging lift-sharing. By the time the project draws to a close in March 2015, we aim to have reduced car miles driven on the Black Isle by 1% – approximately one million miles – and save hundreds of tonnes of greenhouse gas emissions.

Why an active travel map?

One of the barriers to active travel – walking, cycling, scootering (any mode of travel using human energy instead of fossil fuel energy!) – is not knowing good routes to take. Active travel maps highlight the best paths in and around a community, helping local people see that you don't have to . An active travel map is also a great way to 'collect evidence' regarding existing infrastructure. The Million Miles team often receives comments on good and bad spots for cyclists on the Black Isle – a detailed map will help identify these areas and make it easier for us to take action. We aim to create an active travel map of the Black Isle towards the end of 2014. It will be available online and we also intend to print copies off to raise awareness of routes across the peninsula. As well as encouraging more cycling and walking, who knows what other benefits a detailed, up-to-date map of the Black Isle will bring!

Sourcing mapping data

There are lots of maps out there are lots of potential data sources for an active travel map. We're big fans of Ordnance Survey maps here at the Million Miles project – they look great and provide a huge amount of detail that helps navigation. However, Ordnance Survey maps are not always that helpful when planning an active travel journey. Ordnance Survey maps will always be slightly behind the curve, whether it's the dusty old edition that doesn't have the A9 on or a more recent version missing the new housing estate. As the world moves online, more and more people are navigating using a variety of digital maps and applications that use the underlying data. Although digital maps are undoubtedly the way forward, they often lack sufficient detail to inform decisions about cycling and walking.

We also have some significant hurdles to overcome...

- Active travel routes will alter over time (e.g. alteration of forestry tracks, new purpose-built paths), which means that the map could be out-of-date soon after printing.
- The Black Isle is a large rural peninsula, so gathering information about routes is a time-consuming and arduous process.
- We have a dispersed population across the Black Isle, which makes it difficult to know what journeys people could realistically make on foot or by bike.

Our solution!

Transition Black Isle has decided to take an innovative approach to our active travel map. We are going to 'crowd-source' mapping data by asking local people to contribute information to the online map www.OpenStreetMap.org. The Million Miles team will then be able to convert this information into an active travel map of the Black Isle.

OpenStreetMap

OpenStreetMap is a collaborative project that aims to create a free editable map of the entire world. Born in 2004 out of frustration with the limitations placed on conventional maps, OpenStreetMap now has over 1.3 million contributors (as of September 2013). OpenStreetMap was inspired by the success of Wikipedia and is by driven by data collection and editing by volunteers. Anyone can register as a contributor and the user-friendly editors simply the process of adding information. The underlying data is freely available under the Open Database License for use in novel and interesting applications, including an active travel map of the Black Isle! Visit wiki.openstreetmap.org as it explains everything you could possibly want to know about OpenStreetMap.

OpenStreetMap – the secret to our active travel map
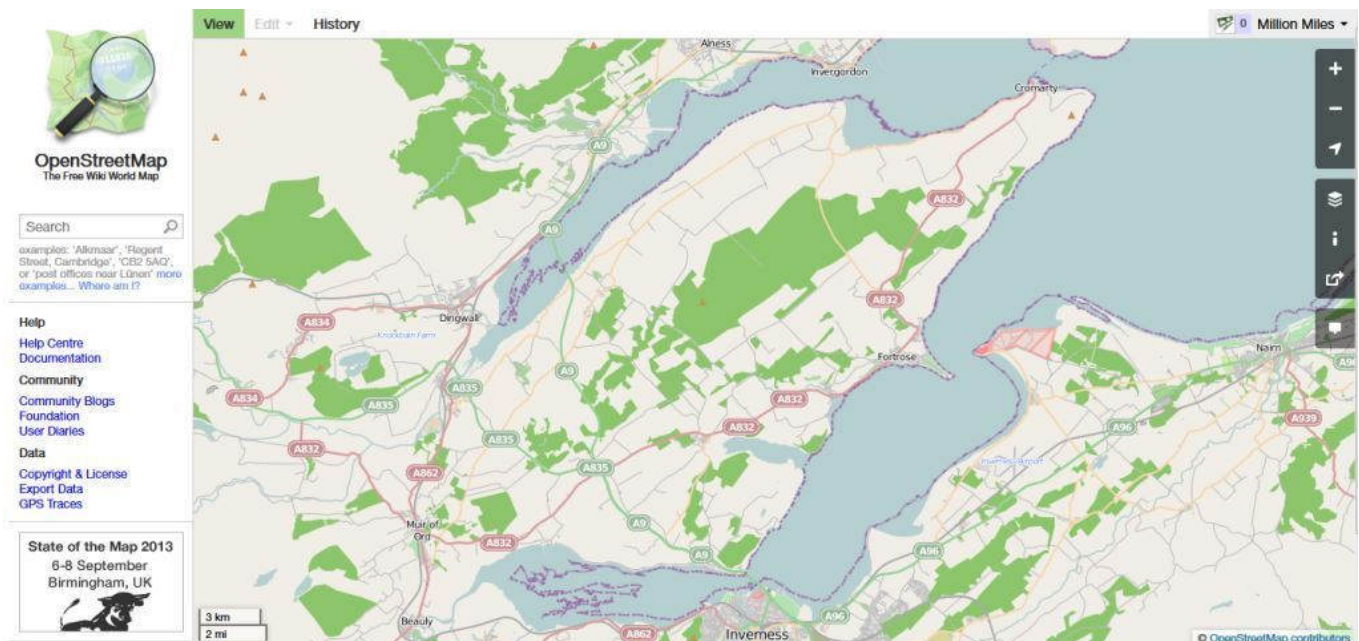
The Black Isle on OpenStreetMap in September 2013 (© OpenStreetMap contributors)

The elements of OpenStreetMap

Before we go any further, we need to have a little technical background! Elements are the building blocks of OpenStreetMap and they consist of…

- ☞ **Nodes** – a single geographic point to mark a standalone feature.
- ☞ **Ways** – a linked series of **nodes** that represent a linear feature (e.g. road, waterway) or connected to form an area (e.g. woodland, building).
- ☞ **Relations** – a defined connection between multiple **nodes** and **ways** to describe a relationship (e.g. national cycle route).

All of these elements can have **tags**, which make OpenStreetMap so powerful. An extraordinary diversity of tags can be attached to any **node**, **way** or **relation**. This 'metadata' is then used to define the element in a

map (i.e. naming and classifying a road or labelling and categorising a building). A tag consists of a **key** (a broad category for the element) and a **value** (a more specific description within the key). A tag is written in OpenStreetMap as **key=value**. The Map Features section on the OpenStreetMap wiki lists commonly used tags – you may be surprised at the level of detail (e.g. craft=beekeeper; shop=organic; landuse=orchard). If you are wondering how a feature would be tagged in OpenStreetMap, just search in the wiki! The Million Miles team want as much information tagged around the Black Isle as possible.

Gathering data for OpenStreetMap

A considerable amount of data has been donated by various organisations and agencies for OpenStreetMap to use. These datasets form the skeleton of the map, including major settlements, road networks, coastline and prominent natural features. This means that even areas that have not been surveyed have a basic outline that gives a useful starting point. There are various ways to gather data to add to OpenStreetMap…

- ☞ **Local knowledge** – easily recognisable features in a known location
- ☞ **Ground surveys** – information at a specific location gathered on paper or via a GPS device
- ☞ **Tracing over images** donated to OpenStreetMap (e.g. Ordnance Survey OpenData Streetview map, Bing satellite photography).

Transition Black Isle is looking for local people to contribute through combinations of these methods. If you know that an amenity lies next to a particular junction, just add it to the map. However, it's not easy to do this from memory every time. A considerable amount of detail can be added by drawing over the various background maps in the editing programs (e.g. buildings, land cover, waterways). In fact, this is how the map is being edited remotely by OpenStreetMap members who do not necessarily need to be familiar with the Black Isle. Of course, any information added remotely should be checked at some point. That is where ground surveys come in! You can go out with a piece of paper or a printout of OpenStreetMap and note features. GPS devices can also be used to record traces. The Million Miles team will be holding events across the Black Isle where we will survey different communities (known as 'mapping parties' by OpenStreetMap contributors). Surveying an area is the best way to add detail, but background images will still be helpful when drawing features.

At this point, we must emphasise that **copyrighted maps cannot be used** as a source of data when editing OpenStreetMap. Most online maps are copyrighted, including most free-to-use maps (e.g. Google Maps). Using copyrighted resources could potentially get OpenStreetMap into serious legal difficulties. As a rule-of-thumb, only use external resources available in the editing programs (e.g. OS OpenData). Always attribute an external resource as the source of the data when editing if you have used it to position a feature on OpenStreetMap.

Editing OpenStreetMap

The first step to editing OpenStreetMap is to create an account. Several Transition Black Isle members are using "Million Miles" in their username – it would be great if others did this to help raise awareness of the project amongst nearby contributors. The 'Edit' tab is adjacent to the 'View' tab – click to select one of the three programs for editing OpenStreetMap…

- ☞ **Potlatch** – older in-browser editor designed to make editing more straightforward.
- ☞ **iD** – newest in-browser editor that aims to be simple and user-friendly.
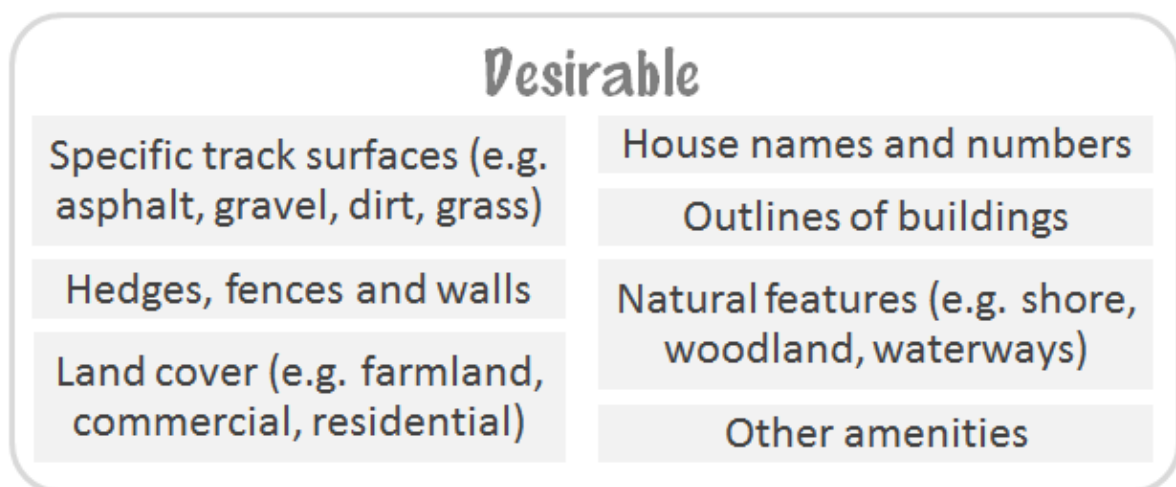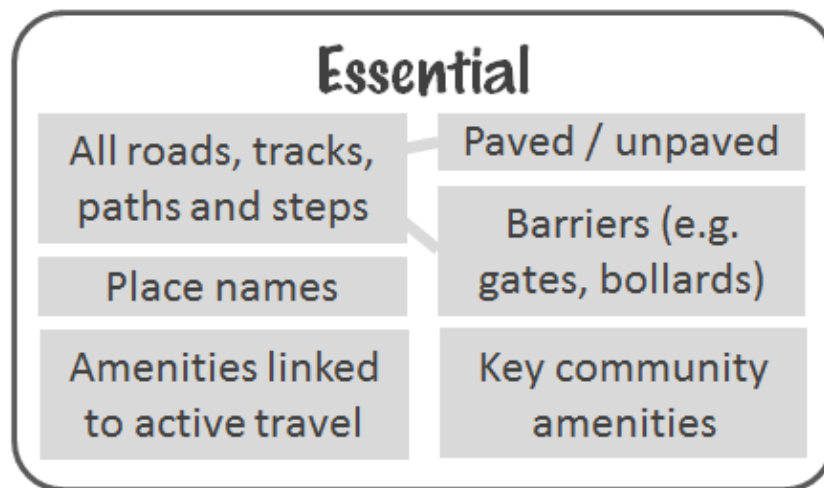- ☞ **JOSM** – powerful standalone software for experienced users.

We currently recommend starting with iD. It is a newer system and has become the default editor, although there are still some issues with certain web browsers (iD may not work with Internet Explorer, but it should be fine with Chrome and Firefox). It would be too difficult to try and explain all of the functions of each system! The online wiki includes a Beginner's Guide to editing and there is a wealth of information elsewhere on the internet (including video tutorials).

Features to add to OpenStreetMap

Essential and desirable features

In a sense, we want to see as much information added to OpenStreetMap as possible. The more detail added the more powerful OpenStreetMap becomes. However, some information is '**essential**' because it provides key details to inform active travel and other information is '**desirable**' because they help people navigate and identify destinations. So we want to make sure that all of the roads, tracks and paths are included and as many of their attributes tagged as possible. For example, it is essential that any path added is tagged as 'paved' or 'unpaved' to inform routing decisions and a more specific description would be desirable (e.g. dirt, gravel, asphalt). It would be great to see as many amenities added as possible. The graphic below summarises the Million Miles team is looking for.

Essential

All roads, tracks, paths and steps	Paved / unpaved
Place names	Barriers (e.g. gates, bollards)
Amenities linked to active travel	Key community amenities

Desirable

Specific track surfaces (e.g. asphalt, gravel, dirt, grass)	House names and numbers
Hedges, fences and walls	Outlines of buildings
Land cover (e.g. farmland, commercial, residential)	Natural features (e.g. shore, woodland, waterways)
	Other amenities

We have also put together the key=value combinations for features that you may wish to contribute to OpenStreetMap (by no means exhaustive!). The lists also serve as a reminder of features to look out for when surveying. Read through the sections below to get a flavour of what needs to be added. In addition, the OpenStreetMap wiki includes pages that summarise the tags associated with hiking and cycling.

Names

The Black Isle is a rural area with lots of hamlets and other isolated dwellings between the main villages. Therefore, the map is unlikely to be completely up to date (OS Open Data Streetview is a good source of local names). Road names are also likely to require adding. See the OpenStreetMap wiki pages on names in places for additional information.

Road, track or path? Getting it right!

It is very important that roads, tracks and paths are tagged correctly. Below is a breakdown of road and path 'values' in the 'highway' tag…

Types of roads (essential)	Types of paths (essential)
highway=tertiary ('C' roads in the UK; tend to have white lines down centre) **highway=residential** (roads lined with housing) **highway=service** (access roads within industrial estates, car parks, etc.) **highway=track** (road for agricultural or forestry uses; usually unpaved)	**highway=bridleway** (path for horses; access for pedestrians and cyclists assumed) **highway=cycleway** (path mainly for cyclists) **highway=footway** (path mainly for pedestrians and unlikely to be suitable for most bikes) **highway=steps** (flight of stairs on footways)

The main advantage of accurate tagging is that the different classifications have implied access rights. Although the tag 'highway=path' is available, it is far better to use a more specific tag because a highway with the 'path' value must be tagged with additional details (e.g. access=*). This is not necessary if one of the key=value combinations listed above is used, as can be seen below…

		Implied access rights for value			
		Motorised vehicles	Horses	Bicycles	Pedestrians
Values for 'highway=' key	All roads except 'motorway' (including 'track')	✔	✔	✔	✔
	'bridleway'	✖	✔	✔	✔
	'cycleway'	✖	✖	✔	✔
	'footway'	✖	✖	✖	✔
	'steps'	✖	✖	✖	✔

Details of paths and tracks

A huge amount of detail can be used to describe roads, tracks and paths. This information is incredibly useful when making decisions about routing, especially if on a bike. So it's very important to add as much detail as possible. Critically, the surface must be added, even in simply terms of paved and unpaved. Unless it is clearly a road with asphalt, these details are probably only going to be gathered through ground surveys. Useful tags are given below...

	Essential	Desirable
Surfaces	**surface=paved** (a highway sealed along its length with a solid covering) **surface=unpaved** (a highway unsealed along its length with a loose covering)	**Further description of the surface** (=asphalt; =compacted; =concrete; =dirt; =grass; =gravel; =paving_stones; =sand; =wood) **Track grade** (=grade1 – paved track; = grade2 – surface of gravel or densely packed dirt/sand; =grade3 – an even mixture of hard and soft materials; =grade4 – prominently dirt/sand/grass, but with some hard materials; =grade5 – only grass, sand and/or soil)
Access control	**barrier=bollard** (solid metal or concrete pillar to block large traffic) **barrier=cycle_barrier** (metal bars blocking bicycle traffic) **barrier=gate** (section of a linear barrier that can be swung open or closed for access)	**barrier=cattle_grid** (bars set in road surface to block livestock) **barrier=chain** (metal chain blocking access) **barrier=kissing_gate** (section of a linear barrier that provides narrow opening) **barrier=log** (tree trunk left on a track to block vehicular access) **barrier=stile** (allows pedestrians to cross over a linear barrier) **barrier=swing_gate** (large gate that must be opened to allow vehicular access) **traffic_calming=bump** (short speed bump to slow traffic; sleeping policeman) **traffic_calming=hump** (long rounded hump to slow traffic)
Other details	**bicycle=dismount** (cyclists must dismount; e.g. underpasses) **highway=bus_stop** (place on a road where a bus stops) **highway=crossing** (place where pedestrians can cross a road) **highway=traffic_signals** (traffic lights) **width=[number]** (denotes width of a track or path; '=3' would be 3 metres)	**highway=turning_circle** (rounded area at the end of a road to facilitate turning) **passing_places=yes** (a highway with frequent places to allow traffic to pass) **incline=value%/up/down** (marking slope) **lit=yes/no** (path that is lit)

Amenities and buildings

An active travel map wouldn't be complete if it didn't include facilities and amenities linked to walking and cycling. Some tags will be more directly associated with active travel (e.g. bench, bike parking). A great way to add detail to OpenStreetMap is to draw outlines of buildings. This is easily done by tracing over background satellite images or low-level maps (make sure you check on the ground at some point if remote mapping). Below is a list of essential and desirable amenities and buildings to add (although it's a bit subjective as to whether each is vital or not)...

	Essential	Desirable
Amenities linked to active travel	**amenity=bench** (place to sit!) **amenity=bicycle_parking** (rack or other site to park bikes) **amenity=parking** (place to ditch the car!) **amenity=toilets** (place to... well...!) **tourism=picnic_site** (place to have a packed lunch!)	**information=board** (display on local interest) **information=map** (board with a map) **information=guidepost** (signpost) **amenity=shelter** (place to flee the Highland weather!) **tourism=viewpoint** (place to take in the view!)
Community amenities	**amenity=pub** (place selling alcoholic drinks and usually food) **amenity=restaurant** (place serving meals) **amenity=cafe** (place serving snacks and small meals)	**amenity=bank** **amenity=atm** **amenity=doctors** **amenity=postbox** **amenity=post_office** **amenity=recycling** (combine with recycling_type=container) **amenity=shelter** etc. etc.!
Buildings (when drawing outlines)	**building=school** (use various tags to define further)	**building=house** (single dwelling) **building=industrial** (factory or workshop) **building=commercial** (office building) **building=church** **entrance=main** (way in, important for large buildings)

Land cover

Land cover helps make OpenStreetMap beautiful! With different types of land rendered in different colours and fences and walls drawn on, it becomes easier to distinguish locations and navigate. It can also help generate interest in attractive rural areas (e.g. wetland in a lochan surrounded by woodland). Below are some essential (note the distinction between a forestry plantation and natural woodland)…

	Essential	Desirable
Man-made features	**landuse=forest** (managed plantation where timber is extracted)	**landuse=allotments** (growing land) **landuse=cemetery** (burial ground) **landuse=commercial** (business park, industrial estate) **landuse=farmland** (preferred to 'farm') **landuse=industrial** (area comprising factories, warehouses) **landuse=meadow** (area of grassy vegetation usually mowed for hay) **landuse=recreation_ground** (open green space for recreational activity) **landuse=residential** (area for housing) **man_made=cutline** (lines cut through forests for various purposes; with or without a track/path) **barrier=ditch** (trench or ditch not easily crossed) **barrier=fence** (boundary structure supported by posts; use 'fence_type' to add details) **barrier= hedge** (closely planted shrubs or bushes that mark a boundary) **barrier= retaining_wall** (structure that stabilises soil; right side marks top and left side marks bottom) **barrier= wall** (freestanding structure usually made from brick, concrete or stone)
Natural features	**waterway=river** (narrow rivers less than 12m across; rendered as a line) **waterway=stream** (natural small waterway; could possibly be jumped!) **natural=wood** (natural woodland that has not been grown for timber extraction)	**natural=wetland** (boggy ground) **natural=beach** (section of coastline consisting of sand, gravel, pebbles, etc.) **waterway=riverbank** (broad rivers wider than 12m; define opposite riverbanks; harder to map correctly that =river and =stream!) **waterway=ditch** (small depression to channel water)

Remember that this is just a guide as to what we consider to be an essential or desirable addition to OpenStreetMap – feel free to add as much or as little detail as you wish!

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